UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C., 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

PC Code: 128857
Chemical: Myclobutanil
DP Barcode: D329420, D 323805
July 18, 2006

AQUATIC EXPOSURE AND RISK ASSESSMENT FOR MYCLOBUTANIL USE ON HOPS AND SOYBEANS

SUBJECT: Section 3 Myclobutanil use on hops and soybeans.

TO: Mary Waller, RM21
Fungicide Branch
Registration Division (7505P)

FROM: James Goodyear, Biologist
James K. Wolf, Environmental Scientist
Environmental Risk Branch 3
Environmental Fate and Effects Branch (7507C)

THRU: Daniel Rieder, Branch Chief
Environmental Risk Branch 3
Environmental Fate and Effects Branch (7507C)

We have been requested to prepare an ecological risk assessment using information and detailed assessments previously developed by EFED (D296319, D317279, D243037, D244639, D274305, D244639). This includes Section 18s previously prepared for myclobutanil use on hops (D243037) and for use on soybeans to control soybean rust (D317281, D317279). There is more discussion about the hops use, because the new use rates are different than previous rates, the environmental fate data used as inputs to the models have changed due to differences in EFED guidance for modeling inputs, and different or updated versions of the models were used (D329419). The soybean assessment (D317281) was completed more recently and thus followed current Division policy and guideline. Detailed discussion of the models used can be found in the Water Assessment Memorandum (D329419).

EXECUTIVE SUMMARY

The acute LOC was exceeded for marine and estuarine invertebrates for the proposed use rates of myclobutanil on hops. It should be noted that in the previous assessment for hops, myclobutanil was applied as a ground spray. The new label proposes both ground and aerial spray. The soybean use did not exceed any LOCs.

The endangered species LOC was exceeded for marine and estuarine bivalves and crustaceans for the proposed use rates of myclobutanil on hops. The "Locates" program found no listed marine/estuarine bivalves or crustaceans in the areas of the use.

PROPOSED USES

Myclobutanil is a fungicide proposed as a means to control powdery mildew on hops and rust in soybeans. Rally 40W is proposed for use on hops and Laredo EW is proposed for use on soybeans. The proposed rates and numbers of applications, and repeat intervals on the proposed labels are shown in Table 1.

Table 1. Proposed new myclobutanil use rates for hops and soybeans.

Hops (D329420)			
Section 3	Rally (40 W) EPA Reg. No. 62719-411		
Growth Stage	Application Rate (lbs ai/acre[1] : total[2]	Spray Interval (days/number[3])	Use Precautions.
Emergence to training	0.125 to 0.250 : 1.0	7 to 10/4	Do not apply less than 2 oz of Rally 40 W or adequate efficacy may not be achieved.
Training to wire	0.250 to 0.375 : 1.0	5 to 10/4	Do not apply less than 4 oz of Rally 40 W or adequate efficacy may not be achieved
Wire to 14 days to preharvest	0.375 to 0.625 : 1.0	7 to 10/4	Do not apply less than 6 oz of Rally 40 W or adequate efficacy may not be achieved
Soybeans (D323805)			
Laredo EW EPA Reg. No. 62719-493			
	Application Rate (lbs ai[4]/acre[1] : total[2]	Spray Interval (days/number[3])	Use Precautions.
Section 3 Not Specified	0.0625 to 0.125 : 0.25	14 to 21/2	

[1] 1 oz = 0.0625 lbs

[2] Total seasonal rate (lbs ai/acre/season)

[3] Maximum number of applications

[4] 1 oz = 0.01302 lbs.

The rates previously considered in the Section 18s are listed in Table 2.

Table 2. Myclobutanil use rates for hops and soybeans considered in the Section 18s.			
Rally 40W, EPA Reg. No. 62719-411 Nova 40W, EPA Reg. No. 62719-411			
Section 18	Application Rate (lbs ai/acre[1] : total[2])	Spray Interval (days : number[3])	
Hops	0.250 : 2.0	10 to 14 : 8	
Soybeans	0.125 : 0.250	7 : 2	

[1] 1 oz = 0.0625 lbs

[2] Total seasonal rate (lbs ai/acre/season)

[3] Maximum number of applications

Soybeans: There were no LOCs exceedances for aquatic animals based on the proposed myclobutanil application rate (2 applications, 7 days apart at 0.125 lbs ai/acre.) The same conclusion was obtained in the Section 18 (D296319).

Hops: The previous assessment (Section 18, D243037) determined that endangered acute LOCs were exceeded for marine/estuarine invertebrates and fresh water mollusks when myclobutanil was applied to hops in eight 0.25 lb ai/acre and a 10-day minimum reapplication intervals. The rates proposed in the Section 3 allow for a lower seasonal total (from 2 to 1 lb ai/acre), fewer applications (from 8 to 4 applications), but shorter reapplication intervals (5 to 10 days compared to 10 to 14 days) compared to the Section 18 rates. Although the seasonal total is less, the proposed new label is proposing individual application rates that are greater than previously considered (from 0.25 lb ai/acre up to 0.625 lb ai/acre.

The acute LOC was exceeded for marine/estuarine invertebrates for the proposed use rates of myclobutanil on hops. It should be noted that in the previous assessment for hops the myclobutanil was applied as a ground spray. The new label proposes both ground and aerial spray.

ENVIRONMENTAL CONCENTRATIONS

The estimated environmental concentrations (EECs) for the aquatic exposure assessment were estimated using the linked PRZM and EXAMS models (Table 3). A detailed discussion of the modeling is included in the drinking water assessment (D329419). The previous EECs for the hops risk assessment used the GENEEC model, assumed it was applied as ground spray, and used model inputs (fate data) that differ from current EFED guidance. The EECs are less than or similar to the previously determined use rates, thus, the risk from exposure to myclobutanil would be the same as previously determined. The peak surface water EECs represents the upper 1-in-10-year peak event concentration, and other EECs represent the upper 1-in-10-year mean concentrations for 96-hr, 21-day, and 60-day exposure periods.

Table 3. Estimated environmental concentrations (EECs) of myclobutanil in standard pond applied to a soybeans and hops for the proposed new rates[a,c] and the previous rates[b,d].					
		1- in 10-year Myclobutanil Concentration (µg/L)			
Soybeans	Rate	Peak	96-hr (4-day)	21-day	60-day
2 @ 0.125 lb ai/ac	Proposed[a]	5.3	5.2	5.0	4.7
2 @ 0.125 lb ai/ac	Previous[b]	5.1	5.0	4.8	4.5
Hops					
4 @ 0.25 lb ai/ac	Proposed[c]	13.1	13.0	12.9	12.7
1 @ 0.625 lb ai/ac	Proposed[c]	32.6	32.5	32.3	31.5
8 @ 0.25 lb ai/ac	Previous[d]	34.6	34.1	31.4	27.6

[a] DP Barcode D323805

[b] DP Barcode D317281

[c] DP Barcode D329419

[d] DP Barcode D243037

RISK QUOTIENTS

The risk quotients (RQs) for hops and soybeans for hops and soybeans are listed and summarized in Table 4. The RQs for both the previous assessment and current assessment are included. Two application scenarios were evaluated for hops. The first was the total season rate split into four equal applications (4 @ 0.25 lb ai/acre) and the second was a single application at the maximum single application rate (1 @ 0.625 lb ai/acre).

Table 4. Risk quotients for myclobutanil on hops and soybeans using both previous and proposed new hops and soybean application rates.					
		Hops			
Species	LC_{50} or EC_{50} (ppm)	Peak EEC (ppm)	RQ	Peak EEC (ppm)	RQ
	Acute	8 – 0.25 lb ai/acre applications		4 applications[A] [1 application][B]	
Bluegill Sunfish	2.4	0.034	0.01	0.0131 [0.0326]	0.005 [0.014]
Rainbow Trout	4.2	0.034	0.01	0.0131 [0.0326]	0.003 [0.008]
Water Flea	11	0.034	0.01	0.0131 [0.0326]	0.001 [0.003]
Sheepshead minnow	4.7	0.034	0.01	0.0131 [0.0326]	0.003 [0.007]
Eastern Oyster	0.68	0.034	**0.05**[C]	0.0131 [0.0326]	0.019 [0.048]
Mysid	0.24	0.034	**0.14**	0.0131 [0.0326]	**0.054 [0.136]**
	Chronic				
Early life stage	0.98	0.028	0.029	0.0126 [0.0315]	0.0129 [0.032]

Table 4. Risk quotients for myclobutanil on hops and soybeans using both previous and proposed new hops and soybean application rates.

	Soybeans				
	Acute	2 – 0.12 lb ai/acre applications		2 – 0.12 lb ai/acre applications	
Bluegill Sunfish	2.4		<0.05	0.0053	0.0022
Rainbow Trout	4.2		<0.05	0.0053	0.0013
Water Flea	11		<0.05	0.0053	0.00048
Sheepshead minnow	4.7		<0.05	0.0053	0,00112
Eastern Oyster	0.68		<0.05	0.0053	0.00775
Mysid	0.24		<0.05	0.0053	0.0220

[Four] Four applications of 0.25 lbs ai/acre per application, interval 7 days.
[B] One application of 0.625 lb ai/acre maximum single application.
[C] Bold indicates that the endangered species LOC exceeded.

The hops use had two exceedances, the eastern oyster and the mysid. Both are estuarine species. The soy use had no exceedances.

EFFECTS

Since the soy use had no exceedances, it is not expected to have any endangered species effects. Since the hops use had exceedances for the mysid and the eastern oyster, it may have indirect effects on estuarine fish.

Table 5. Listed species risks associated with direct or indirect effects due to applications of Myclobutanil for use on hops. The soybean use had no exceedances.

Listed Taxa	Direct Effects	Indirect Effects
Terrestrial and semi-aquatic plants – monocots		
Terrestrial and semi-aquatic plants – dicots		
Terrestrial invertebrates		
Birds		
Terrestrial phase amphibians		
Reptiles		
Mammals		
Aquatic non-vascular plants		
Aquatic vascular plants		
Freshwater fish		
Aquatic phase amphibians		
Freshwater crustaceans		

Table 5. Listed species risks associated with direct or indirect effects due to applications of Myclobutanil for use on hops. The soybean use had no exceedances.		
Mollusks/estuarine	Yes	
Marine/estuarine fish		Yes
Marine/estuarine crustaceans	Yes	

ENDANGERED SPECIES

EFED's Locates program was run to determine if the hops use would be predicted to have an effect on endangered species of estuarine or marine bivalves or crustaceans. It found that no endangered species were affected. Because Locates' data are entetred by county, this indicates that no hops are grown in counties that effect estuaries.

Table 6. Endangered estuarine and marine species affected by the hops use.

Species in Counties by State and Taxa

No species were excluded

Minimum of 1 Acre

Brackish, Saltwater Crustacean, Bivalve

hops, hops (irrigated)

Alaska, Idaho, Montana, Nevada, Oregon, Utah, Washington

0 Species Affected:

No species were selected for exclusion.
Dispersed species included in report.

Table 7. Endangered estuarine and marine species affected by the hops use.

Species in Counties by State and Taxa

No species were excluded

Minimum of 1 Acre

Freshwater Bivalve

hops, hops (irrigated)

Alaska, Idaho, Montana, Nevada, Washington, Oregon, Utah

0 Species Affected:

No species were selected for exclusion.
Dispersed species included in report.